

(19) 世界知的所有権機関
国際事務局



(43) 国際公開日
2004 年 7 月 15 日 (15.07.2004)

PCT

(10) 国際公開番号
WO 2004/059021 A1

(51) 国際特許分類⁷: C22C 38/00, 38/38, 38/58, C21D 9/46
(21) 国際出願番号: PCT/JP2003/015275
(22) 国際出願日: 2003 年 11 月 28 日 (28.11.2003)
(25) 国際出願の言語: 日本語
(26) 国際公開の言語: 日本語
(30) 優先権データ:
特願 2002-372540
2002 年 12 月 24 日 (24.12.2002) JP

(72) 発明者; および

(75) 発明者/出願人 (米国についてのみ): 横井 龍雄 (YOKOI,Tatsuo) [JP/JP]; 〒870-8566 大分県 大分市 大字西ノ洲 1 番地 新日本製鐵株式会社 大分製鐵所内 Oita (JP). 林田 輝樹 (HAYASHIDA,Teruki) [JP/JP]; 〒870-8566 大分県 大分市 大字西ノ洲 1 番地 新日本製鐵株式会社 大分製鐵所内 Oita (JP). 小原 昌弘 (OHARA,Masahiro) [JP/JP]; 〒870-8566 大分県 大分市 大字西ノ洲 1 番地 新日本製鐵株式会社 大分製鐵所内 Oita (JP). 土橋 浩一 (TSUCHIHASHI,Kouichi) [JP/JP]; 〒870-8566 大分県 大分市 大字西ノ洲 1 番地 新日本製鐵株式会社 大分製鐵所内 Oita (JP).

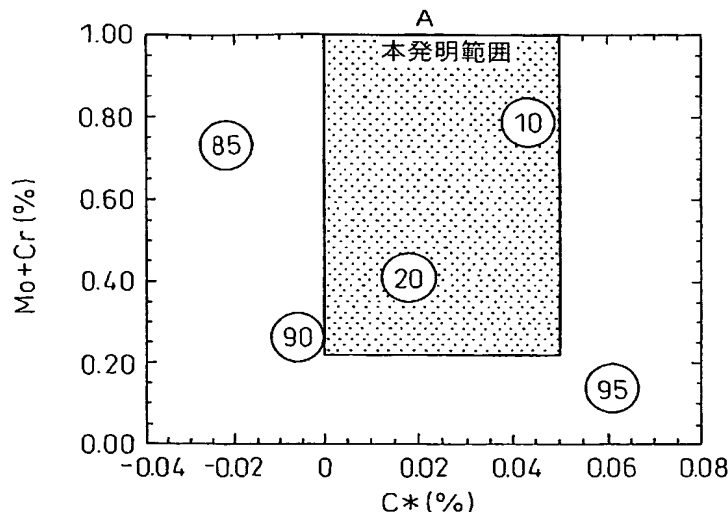
(71) 出願人 (米国を除く全ての指定国について): 新日本製鐵株式会社 (NIPPON STEEL CORPORATION) [JP/JP]; 〒100-8071 東京都千代田区大手町二丁目 6 番 3 号 Tokyo (JP).

(74) 代理人: 青木 篤, 外 (AOKI,Atsushi et al.); 〒105-8423 東京都港区虎ノ門三丁目 5 番 1 号 虎ノ門 3 7 森ビル 青和特許法律事務所 Tokyo (JP).

[続葉有]

(54) Title: HIGH STRENGTH STEEL SHEET EXHIBITING GOOD BURNING WORKABILITY AND EXCELLENT RESISTANCE TO SOFTENING IN HEAT-AFFECTED ZONE AND METHOD FOR PRODUCTION THEREOF

(54) 発明の名称: 溶接熱影響部の耐軟化性に優れたバーリング性高強度鋼板およびその製造方法



A...SCOPE OF THE PRESENT INVENTION

(57) Abstract: A high strength steel sheet exhibiting good burning workability and excellent resistance to the softening in a heat-affected zone, characterized in that it has a chemical composition, in mass %: C: 0.01 to 0.1 %, Si: 0.01 to 2 %, Mn: 0.05 to 3 %, P ≤ 0.1 %, S ≤ 0.03 %, Al: 0.005 to 1 %, N: 0.0005 to 0.005 %, Ti: 0.05 to 0.5 %, Cr ≤ 0.5 %, Mo ≤ 0.5 %, with the proviso that $0 \% < C - (12/48Ti - 12/14N - 12/32S) \leq 0.05 \%$ and $Mo + Cr \geq 0.2 \%$, and the balance: Fe and inevitable impurities, and has a microstructure comprising ferrite or ferrite and bainite; and a method for producing the high strength steel sheet.

(57) 要約: 本発明は、溶接熱影響部の耐軟化性に優れたバーリング性高強度鋼板およびその製造方法を提供するもので、質量%にて、C : 0.01~0.1 %、Si : 0.01~2 %、Mn : 0.05~3 %、P

[続葉有]

WO 2004/059021 A1

EV 321841256 US



(81) 指定国 (国内): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

パ特許 (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI 特許 (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

添付公開書類:
— 国際調査報告書

(84) 指定国 (広域): ARIPO 特許 (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), ユーラシア特許 (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), ヨーロッパ

2文字コード及び他の略語については、定期発行される各PCTガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

$\leq 0.1\%$ 、 $S \leq 0.03\%$ 、 $Al : 0.005 \sim 1\%$ 、 $N : 0.0005 \sim 0.005\%$ 、 $Ti : 0.05 \sim 0.5\%$ 、を含み、さらに $0\% < C - (12/48Ti - 12/14N - 12/32S) \leq 0.05\%$ 、さらに、 $Mo + Cr \geq 0.2\%$ 、かつ $Cr \leq 0.5\%$ 、 $Mo \leq 0.5\%$ 、を満たす範囲で C、S、N、Ti、Cr、Mo を含有し残部が Fe 及び不可避免の不純物からなる鋼であって、そのマイクロ組織が、フェライト、またはフェライトおよびベイナイトからなることを特徴とする溶接熱影響部の耐軟化性に優れたバーリング性高強度鋼板。

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP03/15275

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl⁷ C22C38/00, 38/38, 38/58, C21D9/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl⁷ C22C38/00-60, C21D9/46-48

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2004
Kokai Jitsuyo Shinan Koho 1971-2004 Jitsuyo Shinan Toroku Koho 1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2002-363685 A (NKK Corp.), 18 December, 2002 (18.12.02), Claims; Par. Nos. [0009], [0024], [0044], [0049], [0060] to [0064] (Family: none)	1-9
X	US 2002/162613 A1 (KOBE STEEL, LTD.), 07 November, 2002 (07.11.02), Claims & JP 2001-20039 A	2-5, 7, 9
A	JP 9-272923 A (NKK Corp.), 21 October, 1997 (21.10.97), (Family: none)	1-9

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search
02 March, 2004 (02.03.04)

Date of mailing of the international search report
16 March, 2004 (16.03.04)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

EV 321841256 US

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/15275

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2001-220647 A (Kawasaki Steel Corp.), 14 August, 2001 (14.08.01), (Family: none)	1-9
P,A	JP 2003-34825 A (NKK Corp.), 07 February, 2003 (07.02.03), (Family: none)	1-9
P,A	JP 2003-105446 A (NKK Corp.), 09 April, 2003 (09.04.03), (Family: none)	1-9